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(12) # EUROPEAN PATENT APPLICATION

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(54) **Wheel, particularly for skateboards or rollerskates.**

(57) Wheel, particularly for skateboards or rollerskates, including a central hub (302) with spokes (303) associated with a tire (305) partially affecting the interspace between the spokes and the hub.

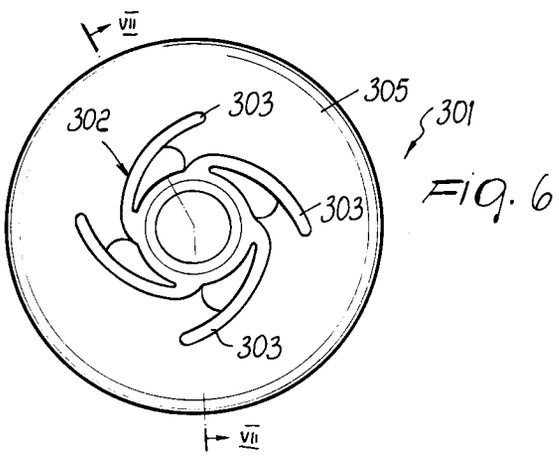

Fig. 6

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The present invention relates to a wheel, particularly for skateboards or rollerskates comprising a shoe associated with a frame for supporting a plurality of wheels.

Conventional rollerskates in fact are now usually constituted by a shoe having a sole associated with a frame to which a plurality of wheels are pivoted. The wheels are arranged either in pairs or in line.

In these conventional skates the wheels may have no central hub or may have an open hub with which a tire is associated. The tire interacts directly with the ground.

A problem that arises in the use of these conventional wheels is that the tire has a preset rigidity which may be excessive depending on the track or on the user's technical skill level, thus transmitting considerable vibrations to the frame and therefore to the user's leg.

In contrast, an excessively low rigidity of the tire leads to a rapid wear of the tire, forcing frequent replacement of the entire wheel.

This operation, besides being onerous for the user, is not easy, because it requires particular tools such as for example screwdrivers or adjustable wrenches.

US patent no. 4,208,073 discloses a wheel for skateboards and rollerskates which is constituted by a first annular wheel portion, which has a low friction coefficient, and by a second annular wheel portion, which has a high friction coefficient. The annular portions are coaxially associated.

The outer perimetric edges have such a radius so as to facilitate travel of the wheel over rough surfaces.

However, even this solution has drawbacks, because the annular portion which has a low friction coefficient is necessarily relatively rigid and thus transmits directly to the skate frame all the vibrations due to the unevenness of the ground.

In a similar way, the annular portion having a high degree of friction is necessarily relatively soft and thus subject to localized wear.

Furthermore, the high rigidity of the wheel, i.e. of the part which interacts with the ground, does not allow the user to perform maneuvers that entail the separation of the wheel from the ground (a jump), since landing is very violent because the stresses of the impact are fully transmitted to the foot.

The aim of the present invention is to eliminate the drawbacks described above in conventional wheels by providing a wheel for skates or skateboards which allows the user to select the optimum degree of rigidity of the wheels according to his/her individual requirements and according to the type of track.

Within the scope of this aim, an important object is to provide a wheel that allows to absorb in an optimum manner the vibrations caused by ground roughness or caused by particular maneuvers such as for example jumps.

Another important object is to obtain a wheel which associates with the preceding characteristics that of allowing the user to immediately perceive the selected degree of rigidity and/or the selected degree of vibration damping.

Another important object is to provide a wheel which is structurally simple and easy to industrialize and allows the user to customize the wheel aesthetically.

Another object is to provide a wheel which is reliable and safe in use and has low manufacturing costs.

This aim, these objects and others which will become apparent hereinafter are achieved by a wheel, particularly for skateboards or rollerskates, characterized in that it comprises a tire and a hub, said hub having spokes defining an interspace with said hub, said tire at least partially affecting said interspace.

Further characteristics and advantages of the invention will become apparent from the detailed description of some particular, but not exclusive, embodiments, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a side view of the wheel;

figure 2 is a sectional view of the wheel, taken along the plane II-II of figure 1;

figure 3 is a view, similar to figure 1, of another embodiment;

figure 4 is a view, similar to figure 1, of another embodiment;

figure 5 is a sectional view of the wheel, taken along the plane V-V of figure 4;

figure 6 is a side view of the wheel according to a further aspect of the invention;

figure 7 is a section view of the wheel according to the plane VII-VII of figure 6;

figure 8 is a side view of the wheel according to still a further aspect of the invention.

With reference to the above figures, the reference numeral 1 designates a wheel comprising a central hub 2 which has spokes 3 and with which it is possible to associate a bearing 4 which is integrated with a pivoting pin (not shown).

The wheel comprises a tire 5 which may partially or fully affect the interspace between the spokes 3 and the central hub 2.

The tire 5 in fact has multiple wings 6 which partially or totally affect the interspace formed between the spokes with respect to the hub or to the seats for the bearing 4.

As shown in figure 1, wings 6 alternately affect the spaces and interact directly at their free end with the base 7 of the central hub 2 that faces them.

The presence of these wings 6 and thus their extension allow to vary the overall rigidity of the tire 5.

The wings 6 can also be made of a different material with respect to the tire 5, or at least with respect to the part thereof which interacts with the ground, so as to allow further damping of the vibrations transmitted from the central hub 2 to the user's leg, and this is achieved simply by using more or less rigid or more or less elastic materials.

In order to facilitate an additional function, which is the absorption and return of the energy due to impact with the ground during maneuvers such as a jump, it is possible to use materials that have different densities and geometries according to the intended elastic response.

For this purpose leaf springs may be used for more rigid use and of elastic bearings for softer use.

Wings 6 can be formed together with the tire 5 or can be interposed between its surface or inner perimetric edge thereof and appropriate seats formed on the central hub.

It has thus been observed that the invention has achieved the intended aim and objects, a wheel for rollerskates or skateboards having been obtained which allows the user to preset the optimum degree of rigidity of the wheel according to his/her individual technical requirements and according to the type of track.

The wheel thus provided allows to absorb, to a presettable extent, the vibrations applied to it by ground roughness or caused by particular maneuvers, such as jumps, for example.

In this case it is also possible to achieve an effect that provides optimum damping and partial return of the energy thus stored, so as to improve sports performance.

Furthermore, the presence of the wings allows to user to immediately visualize the selected degree of rigidity and/or the selected degree of vibration damping, since said degrees can be color-coded.

The wheel according to the invention is susceptible to numerous modifications and variations, all of which are within the scope of the same inventive concept.

Thus, for example, figure 3 illustrates a wheel 101 comprising a central hub 102 which has a plurality of radial spokes 103 with which a bearing 104 is associable.

In this case, too, multiple wings 106 form a tire 105, preferably radially. The wings alternately affect the space between the spokes and the hub.

Figures 4 and 5 also illustrate another embodiment for a wheel 201 which comprises a central hub 202 which has multiple spokes 203 that have a helical extension and alternately affect the thickness of the central hub 202.

The central hub is associable with a bearing, whereas the wheel comprises a tire 205 which has multiple wings 206 that affect the interspace between the spokes 203 and the central hub 202.

Figures 6 and 7 illustrate a wheel 301, according to a further embodiment of the invention, comprising a tire 305 associated with a hub 302.

Hub 302 comprises spokes 303 which are partially embedded in the tire material.

Figure 8 illustrate a wheel 401, according to still a further aspect of the invention, comprising a tire 405 associated with a hub 402.

Hub 402 comprises spokes 403 which are partially embedded in an intermediate member 408. In this manner, the tire 405 is made of an adapted material for contacting the ground, and the spoked hub is resilient and adapted to be connected to the bearing, while the intermediate member 408 is made of an adapted material for absorbing the vibrations and with the required resiliency.

The materials and the dimensions that constitute the individual components of the structure may also be the most pertinent according to the specific requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. Wheel, particularly for skateboards or rollerskates, characterized in that it comprises a tire (5,105,205,305, 405) and a hub (2,102,202,302,402), said hub having spokes (3,103,203,303,403) defining an interspace with said hub, said tire at least partially affecting said interspace.

2. Wheel, according to claim 1, characterized in that said tire (5,105,205,305,405) has wings (6,106,206) adapted to at least partially affect said interspace.

3. Wheel according to claim 2, characterized in that each of said wings has a free end interacting with a facing base of said hub for supporting a bearing (4,104).

4. Wheel according to claim 1, characterized in that said wings (6,106,206) are made of a material that is different from the material of said tire (5,105,205,305,405) or at least from the material of the part thereof that interacts with the ground.

5. Wheel according to one or more of the preceding claims, characterized in that said wings (6,106,206) are made of materials which have different densities and geometries according to the desired elastic response.

6. Wheel according to one or more of the preceding claims, characterized in that said wings comprise at least one leaf spring.

7. Wheel according to one or more of the preceding claims, characterized in that said wings comprise at least one elastic bearing.

8. Wheel according to one or more of the preceding claims, characterized in that said spokes (3,103) have a substantially radial extension.

9. Wheel according to claim 1, characterized in that said spokes (203,303,403) have a substantially helical extension.

10. Wheel according to claim 1, characterized in that said tire (405) comprises an intermediate member (408) at least partially embedded in said spokes (403) of said hub (402).

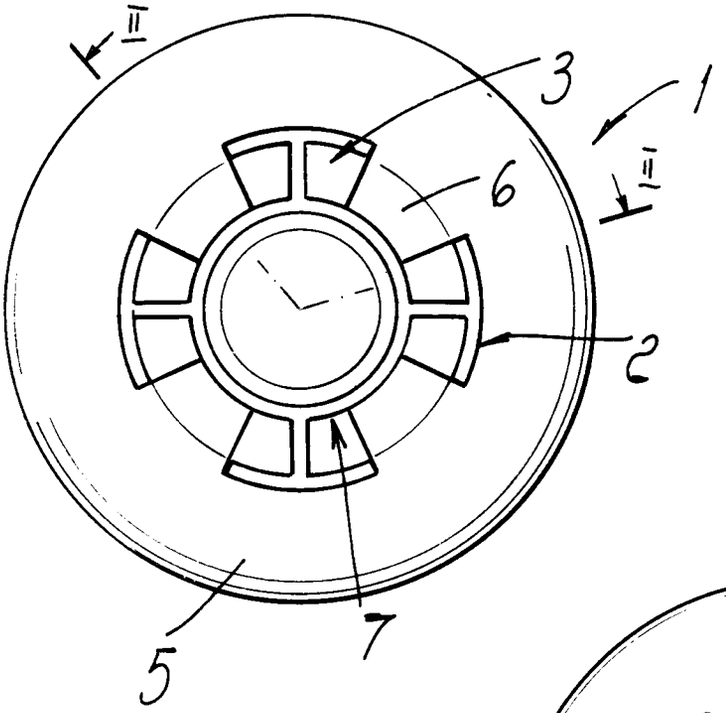

Fig. 1

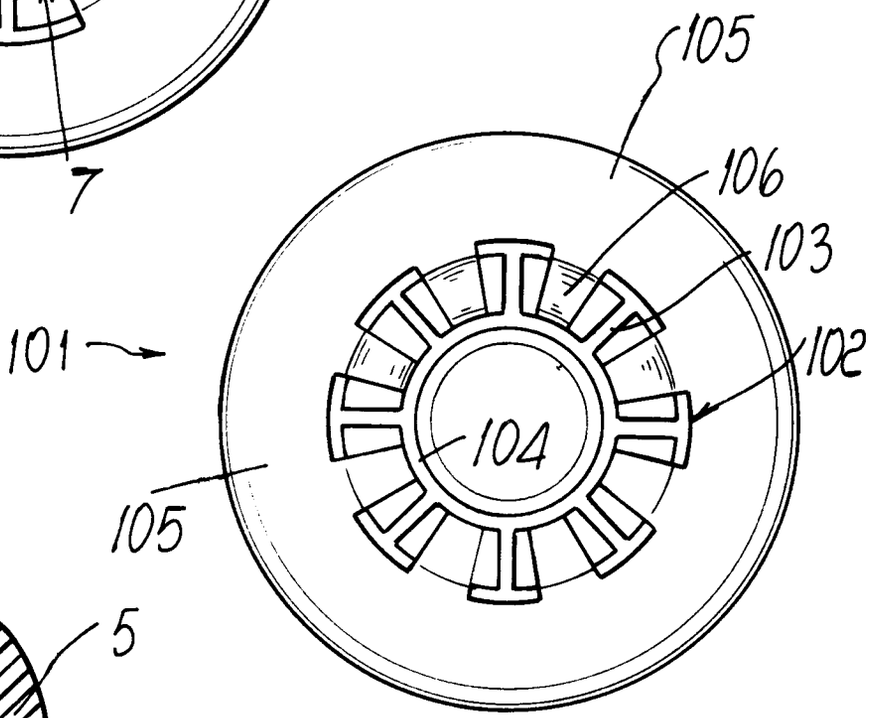

Fig. 3

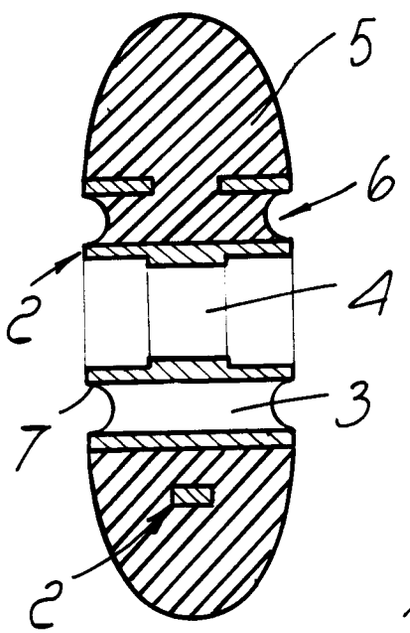

Fig. 2

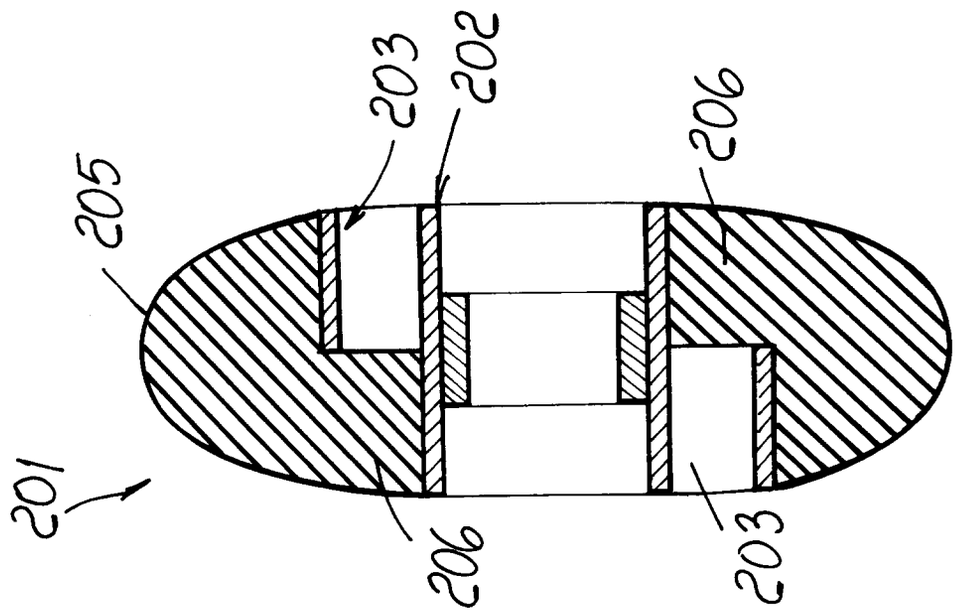

Fig. 5

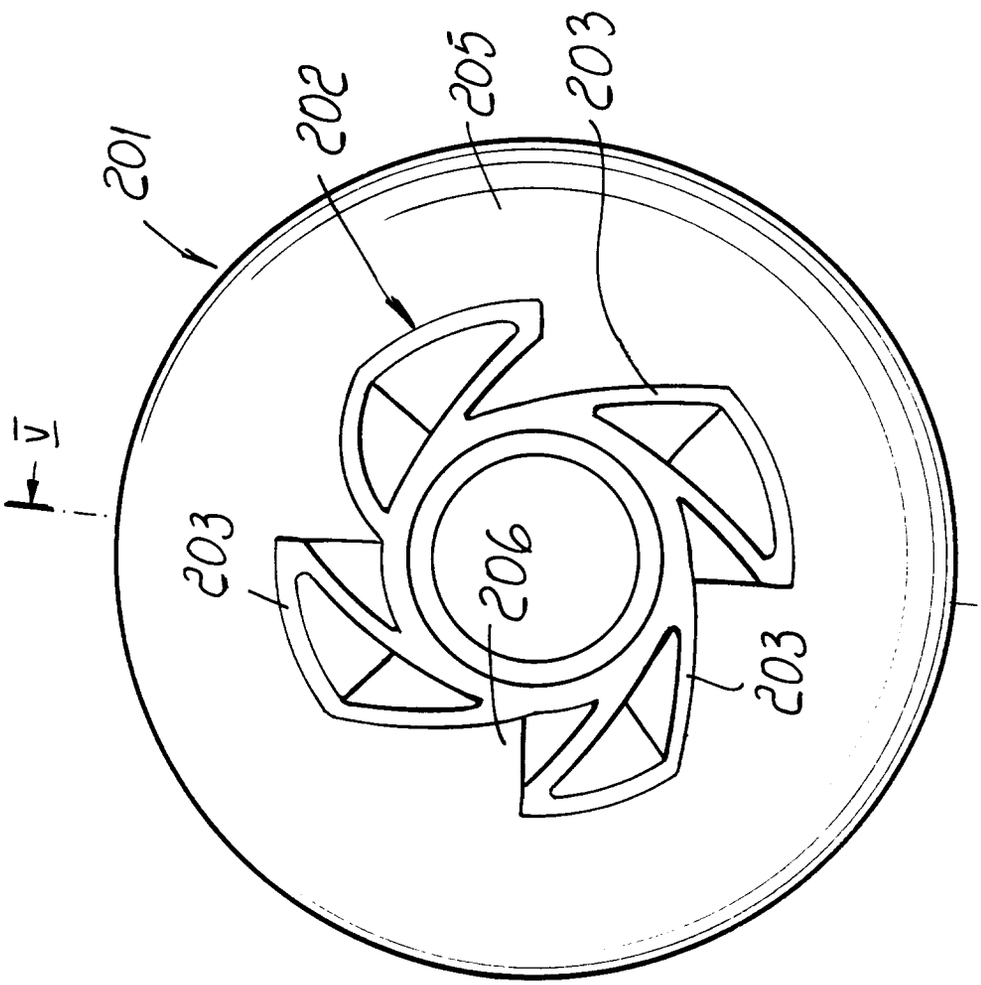

Fig. 4

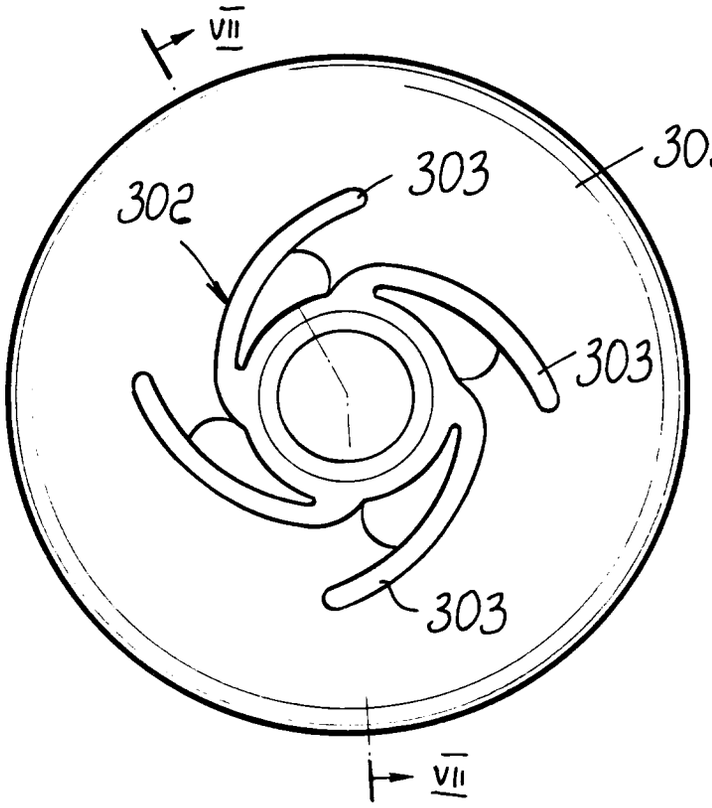

Fig. 6

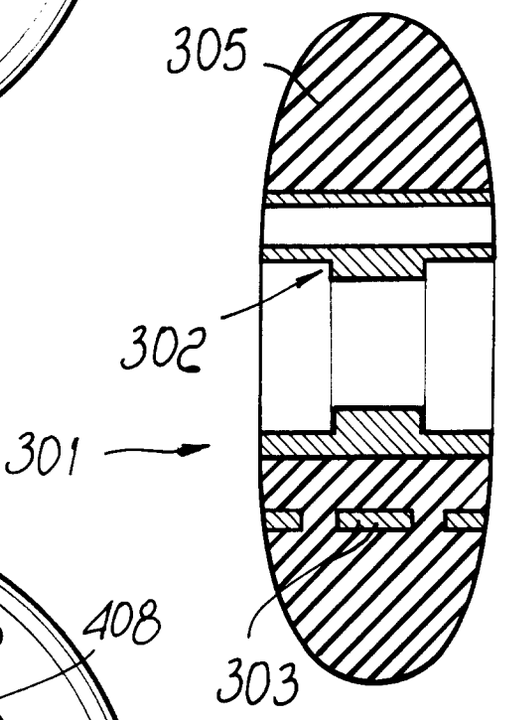

Fig. 7

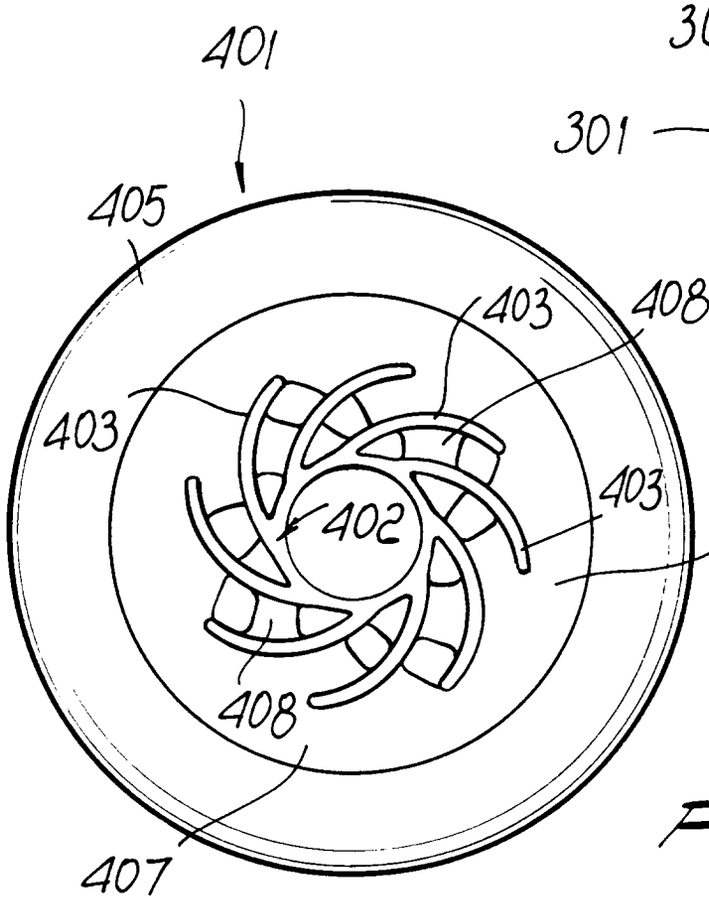

Fig. 8

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 94 11 3891

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	FR-A-2 272 697 (ROLL RINK S.A.) * page 3, line 10 - line 14; figures *	1,2,8	A63C17/22
X	US-A-4 699 432 (KLAMER) * figures 5,6 *	1-3,8	
A,D	US-A-4 208 073 (HECHINGER) * figures 2-5 *	4,5	
A	US-A-3 895 844 (MERBLER) * column 5, line 37 - line 39; figure 4 *	7	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A63C B60B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	9 December 1994	Godot, T

CATEGORY OF CITED DOCUMENTS

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